

A new species of *Gilpinia* Benson (Hymenoptera: Diprionidae) from China

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Abstract: *Gilpinia wui* Wang & Wei sp. nov. of Diprionidae is described from China. The species was ever mentioned as *Gilpinia wui* Xin, nom. nud. without description, figures and diagnosis, and the type was also not designated. The larvae of *G. wui* feed on *Pinus tabulaeformis* Carr. The new species is similar to *G. massoniana* G. Xiao, 1992 from China but differs in clypeus laterally yellow marked, the posterior femur yellowish, the angle formed by the dorsal line between the upper end of the second ctenidium and the lancet apex with the ventral line between the apex of the second serrula and the lancet apex about 25 degrees, the 6th annulus clearly broader, the ventral apical margin of penis valve multitoothed and the larvae feeding on *Pinus tabulaeformis*.

Key words: Symphyta; Diprioninae; sawfly; taxonomy

中国吉松叶蜂属一新种（膜翅目：松叶蜂科）

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摘要: 记述中国吉松叶蜂属 *Gilpinia* Benson, 1939 (膜翅目: 松叶蜂科) 1 新种: 武氏吉松叶蜂 *Gilpinia wui* Wang & Wei sp. nov.。该种曾以 *Gilpinia wui* Xin 之名被报道, 但原文中未给出特征描述、形态图和鉴别特征, 也没有指定模式标本, 该名称属于裸名。*G. wui* 的幼虫以油松 (*Pinus tabulaeformis* Carr.) 叶片为食; 成虫与 *G. massoniana* G. Xiao, 1992 相近, 但唇基两侧具黄斑, 后足腿节黄色, 锯腹片第 2 环上下端与锯腹片尖端连线的夹角为 25°, 锯腹片第 6 环较宽, 阳茎瓣头叶腹侧端部具多个小齿, 寄主油松等, 与后者不同。

关键词: 广腰亚目; 松叶蜂亚科; 叶蜂; 分类

Introduction

Gilpinia wui Xin sp. nov. of Diprionidae was reported from Gansu, China without any

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description, figures, diagnosis and the type designation (Li & Wu 2010). It is a naked name and is invalid according to the zoological nomenclature (Bu & Zheng 2007). In this work, the species is described as new to science in detail and illustrated.

Gilpinia Benson, 1939, the second largest genus of Diprionidae, contains 37 species worldwide (Taeger *et al.* 2010; Hara & Nakamura 2015). Fourteen species have been recorded from China, namely, *G. baiyinaobaoa* G. Xiao & X. Huang, 1985 (Xiao *et al.* 1985), *G. fennica* (Forsius, 1911) (Forsius 1911), *G. funingensis* Wen, Sun & Li, 1991 (Wen *et al.* 1991), *G. hebedentata* Xu, 1997 (Xu 1997), *G. jinghongensis* G. Xiao & X. Huang, 1984 (Xiao *et al.* 1984), *G. jingxii* G. Xiao & X. Huang, 1984 (Xiao *et al.* 1984), *G. lipuensis* G. Xiao & X. Huang, 1985 (Xiao *et al.* 1985), *G. marshalli* (Forsius, 1931) (Forsius 1931), *G. massoniana* G. Xiao, 1992 (Xiao 1992), *G. pinicola* G. Xiao & X. Huang, 1985 (Xiao *et al.* 1985), *G. tabulaeformis* G. Xiao, 1992 (Xiao 1992), *G. tohi* Takeuchi, 1940 (Takeuchi 1940), *G. virens* (Klug, 1812) (Klug 1812) and *G. yongrenica* G. Xiao & X. Huang, 1984 (Xiao *et al.* 1984).

Material and methods

Specimens were examined with a stereomicroscope of model Motic-SMZ-168. Adult images were taken with a Nikon D700 digital camera and the series of images montaged using Helicon Focus (©HeliconSoft). All images were further processed with Adobe Photoshop CS 11.0[®].

The terminology of the general morphology follows Viitasaari (2002) and of the genitalia follows Ross (1945). Annulus, ctenidia and serrula were counted from the base of lancet.

The specimens of this new species examined in this work are deposited in the Insect Collection of Central South University of Forestry and Technology, Changsha, Hunan Province, China (CSCS).

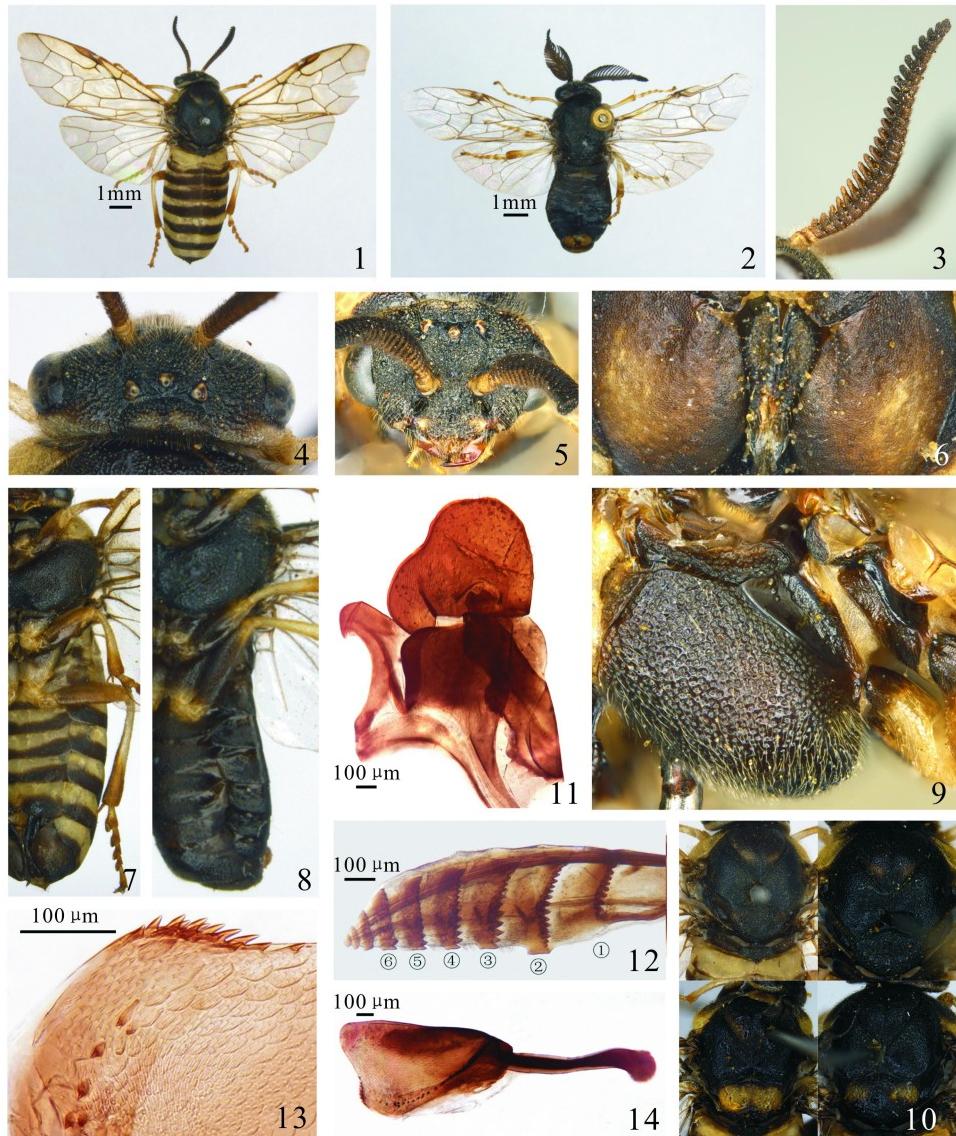
Taxonomy

Gilpinia wui Wang & Wei sp. nov. (Fig. 1–14)

Female (Fig. 1). Body length 12.2 mm; forewing 10.3 mm long, 4.1 mm wide. Head black (Fig. 4) with labrum brown, palpi, two small maculae on lateral clypeus (Fig. 5), dorsal and lateral margins of head yellow; mandible basally black, centrally brown, apically reddish brown to black; antenna (Fig. 3) largely black, scape and pedicel yellow. Mesonotum and metanotum (Fig. 10A) black with lateral pronotum, posterior margin of median mesoscutal lobe yellow; lateral sides of mesoscutellum with brownish spots; cenchrus brownish. Abdominal tergum 1 yellow with lateral posterior margin black; terga (Fig. 8) 2 to 8 and sterna 2 to 7 yellow with posterior margins black; tergum 9 mostly black (Fig. 6); ovipositor sheath black. Legs yellowish brown with basal part of coxa black, basal 2/3 part of tibia, apical 1/2 of tarsomere 1, apex of hind coxa whitish (Fig. 7). Wings transparent; costal, subcostal, first radial 1, anal veins and anal cross-veins yellowish in forewing, other veins black; stigma black with central part yellow.

Head and mesonotum (Fig. 9) densely punctured; ventral margin of supraclypeal area shiny, labrum distinctly wrinkled; lateral katepimeron shiny with few punctures, dorsal

katepimeron and metepisternum wrinkled, metepimeron shiny; terga wrinkled with tergum 9 and lateral posterior margin of tergum 8 sparsely punctured.



Figures 1–14. *Gilpinia wui* Wang & Wei sp. nov. 1, 3–7, 9, 10, 12: holotype; 2, 8, 11, 13, 14: paratype. 1. Female adult, dorsal view; 2. Male adult, dorsal view; 3. Antenna of female, lateral view; 4. Head of female, dorsal view; 5. Head of female, frontal view; 6. Scopa and tergum 9 of female; 7. Female adult, ventral view; 8. Male adult, ventral view; 9. Mesopleuron of female, lateral view; 10. Mesonotum and metanotum of female, dorsal views; 11. Gonoforceps; 12. Lancet; 13. Ventral apical margin of valviceps; 14. Panis valve.

Head and mesonotum covered with dense hairs, hairs about 0.9 times as long as diameter of front ocellus. Clypeus concave apically; frontal area and frontal pit obvious; frontal postocellar furrow concave, lateral postocellar furrows distinct; POL : OOL : OCL = 2 : 2 : 1, distance between eye and torulus 1.3 times as long as distance between toruli; malar space 1.8 times diameter of front ocellus; antenna serrate with 24 antennomeres, apex obtuse, 3–18th rami longer than stem of each flagellomere, length of pedicel 0.7 times diameter of front ocellus, length of ramus 1 0.6 times length of flagellomere 1. Anterior corner of mesoscutellum obtusely protruding with an angle about 128°, ratio of width and length of mesoscutellum as 1.4; distance between cenchri 0.9 times longest axis of a cenchrus. Inner spur of hind tibia simple and longer than outer spur, its length 0.6 times length of tarsomere 1 (including plantar lobe) and 0.9 times maximum width of hind tibia, total length of tarsomeres 2–5 about 2.3 times length of tarsomere 1; claw with an obvious denticle.

Dorsal width of scopa of apical sheath 2.3 times middle width of a cercus, each scope apically obtuse, slightly protruding beyond tergum 9 in lateral view; angle formed by upper line between upper end of second ctenidium and lancet apex and ventral line between apex of second serrula and lancet apex about 28 degrees; lancet (Fig. 12) blade-like with 9 distinct annuli, strongly narrowing from annulus 6 toward apex, annulus 1 about 0.8 times length of annulus 2; annulus 1 without serrula, annulus 2 with serrula slightly swelling; annulus 1–3 and 6–7 parallel with each other, annulus 3–6 weakly convergent downwards; total length of annuli 1 to apex about 2.4 times maximum width of lancet.

Male (Fig. 2). Body length 8.1 mm, wing expanse 16.3 mm. Black; palpi, labrum and pterostigma pale brownish, cenchri black, wings hyaline, lateral sides of pronotum yellow; coxa black, femur, tibia and tarsomeres brownish, basal tibia and basal tarsomere 1 whitish; claw with an obvious denticle. Punctuation as in female, but clypeus and sternum 9 with small punctures. Antenna with 26 antennomeres, pedicel very narrow, flagellomeres 3–19 pectinate, flagellomere 1 bears a long ramus. OOL: POL about 2 : 2 : 1; distance between eye and torulus 1.2 times distance between toruli; malar space 1.2 times diameter of front ocellus. Inner spur of hind tibia simple, 0.8 times length of tarsomere 1 (including plantar lobe), 1.1 times maximum width of hind tibia, total length of tarsomere 2–5 about 2.0 times length of tarsomere 1. Gonoforceps as in Fig. 11, parapenis long and curvy, apex obliquely truncate, valviceps simple with blunt apex and multitoothed ventral margin and ventral lateral margin (Figs. 13, 14), length of penis valve 3.2 times maximum width of valviceps.

Holotype. ♀, **China**, Gansu Province, Qinzhoushi District, Jiyuan Forest Farm, 29-V-2006, Heng XIN leg. **Paratypes.** 8♀, **China**, Gansu Province, Qinzhoushi District, Jiyuan Forest Farm, 29-V-2006, Heng XIN & Xingyu WU leg.; 2♀, Gansu Province, Qinzhoushi District, Jiyuan Forest Farm, 15-VII-2005, Xingyu WU, leg.; 5♂, Gansu Province, Qinzhoushi District, Jiyuan Forest Farm, 29-V-2006, Heng XIN leg.; 2♂, Gansu Province, Qinzhoushi District, Jiyuan Forest Farm, 15-VII-2005, Xingyu WU leg.; 1♂, Gansu Province, Qinzhoushi District, Jiyuan Forest Farm, 20-VII-2005, Xingyu WU leg.

Variation. Female body length 7.0–12.5 mm, wing expanse 16.0–22.2 mm; male body length 8.0–9.1 mm, wing expanse 16.3–17.8 mm. Except as in the description above, female shows variety on coloration: median mesoscutal lobe and mesoscutellum sometimes uniformly black, two spots of mesoscutellum sometimes distinct and yellow. These variations not related to each other. Stable coloration patterns include basal antenna, lateral sides of clypeus, legs

and abdomen.

Host plant. *Pinus tabulaeformis* Carr.

Etymology. The species epithet "wui" is a noun, and recognizes Mr. Xingyu WU, who collected the type material.

Remarks. This new species is similar to *Gilpinia massoniana* G. Xiao, 1992 from China, but the latter differs from the new species in having the clypeus, supraclypeal area and labrum yellow; the posterior femur reddish; the angle formed by the upper line between the upper end of the second ctenidium and the lancet apex with the ventral line between the apex of the second serrula and the lancet apex about 24 degrees, the annulus 6 thinner; the ventral lateral margin of valviceps not multitoothed, and the host plant *Pinus massoniana* Lamb (Xiao 1992).

Distribution. China (Gansu).

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References

- Bu WJ & Zheng LY 2007. *International code of zoological nomenclature, the fourth edition*. Science Press, Beijing, 160 pp.
- Forsius R. 1911. Über Einige *Diprion* (*Lophyrus* Latr.) Arten. *Meddelanden af Societas pro Fauna et Flora Fennica*, 37: 178–183.
- Forsius R. 1931. A new *Diprion* from China. *Notulae Entomologicae, Helsingfors*, 11(1): 26–27.
- Hara H & Nakamura H. 2015. Pine sawfly *Gilpinia albiclavata* sp. nov. (Hymenoptera: Diprionidae) infesting *Pinus pumila* in the Japanese Alps. *Entomological Science*, 2015(18): 31–40.
- Klug F. 1812. Die Blattwespen nach ihren Gattungen und Arten zusammengestellt. *Der Gesellschaft Naturforschender Freunde zu Berlin Magazin für die neuesten Entdeckungen in der gesamten Naturkunde*, 6(1): 45–62.
- Li YQ & Wu XY. 2010. The investigation and taxonomical research of the sawflies species from Gansu Province V. A list of the genera and species (Hymenoptera: Diprionidae: Diprioninae and Tenthredinidae: Selandriinae, Strongylogasterinae, Rocalinae). *Journal of Gansu Forestry Science & Technology*, 35(2): 1–4.
- Ross HH. 1945. Sawfly genitalia: terminology and study techniques. *Entomological News*, 61(10): 261–268.
- Taeger A, Blank SM & Liston AD. 2010. World catalog of Symphyta (Hymenoptera). *Zootaxa*, 2580: 1–1064.
- Takeuchi K. 1940. A systematic study on the suborder Symphyta (Hymenoptera) of the Japanese Empire (III). *Acta Entomologica*, 3(2): 187–199.
- Viitasaari M. 2002. *Sawflies (Hymenoptera, Symphyta) I. A review of the suborder, the western Palaearctic taxa of Xyeloidea and Pamphilioidea*. Tremex Press Ltd., Helsinki, 516 pp.
- Wen XJ, Sun CH, Li WG, E XQ & Han YS. 1991. Study on *Gilpinia funingensis*. *Forest Pest and Disease*,

- 1991(1): 14–15.
- Xiao GR. 1992. Two new sawflies of the genus *Gilpinia* in China (Hymenoptera, Symphyta, Diprionidae). *Forest Research*, 5(2): 193–195.
- Xiao GR, Huang XY & Zhou SZ. 1985. The Chinese sawflies of the family Diprionidae (Hymenoptera, Symphyta). *Scientia Silvae Sinicae*, 21(1): 30–43.
- Xiao GR, Zhou SZ & Huang XY. 1984. Seven new species of conifer sawflies from China (Hymenoptera: Diprionidae). *Entomotaxonomia*, 6(2-3): 141–150.
- Xu ZH. 1997. Two new species and one new combination of the conifer sawfly family Diprionidae (Hymenoptera: Symphyta) from Yunnan, China. *Zoological Research*, 18(2): 171–176.